



Scientific information on cranes

In this bumper edition of Namibia Crane News we bring you two in-depth reports in "Crane Focus": (1) the results from a recent aerial survey of Wattled Cranes in north-east Namibia, indicating low numbers (only 10 pairs) that are cause for concern; and (2) the draft species account on Blue Cranes (Critically Endangered in Namibia) for the new Red Data Book on Birds. Thank you, Chris and Rob, for these thought-provoking contributions!

Holiday greetings

For cranes, this is the busiest time of the year as they get on with the serious business of breeding! Wilferd Versfeld and his colleague Mr Kapofi of the MET, Etosha report that with the early rains, many birds have started to nest already and the Blue Cranes around Namutoni are also paired up and displaying. For our crane conservationists and friends, we wish you a peaceful and blessed festive season, safe travelling, and thank you for your ongoing interest and support!

CRANE FOCUS (1)

Status of Wattled Cranes on the floodplains of north-east Namibia: results from an aerial survey during August 2004

C.J. Brown¹, P. Stander², S. Mayes¹, L. Conradie², P. Haredoeb³, M. Singwangwa³ and W. Cilliers²

¹Namibia Nature Foundation, ²Wildlife Science,

³Ministry of Environment & Tourism

Ed. 's note: Only one of the four maps in the original report is included below, due to the size of the file; but if you would like us to send you the complete version (1.09 MB), please contact us. Chris has also mentioned extremely high numbers of crocodiles (2 200 of <2 m long and over 9 000 of <2 m long) in the lower Kavango across to the Zambezi, and about 1 400 hippopotamus. So do take care when you do your crane counts! Please contact us or Chris directly if you have any comments on this report (email cb@nnf.org.na).

Areas surveyed

The Okavango River in Namibia, from just northwest the bridge on the Trans-Caprivi highway south to the Botswana border; the entire length of the Kwandu-Linyanti-Lake Liambezi-Chobe system, including the Mamili National Park; and the Zambezi River for its entire length on Namibia's border, including parts of the adjacent East Caprivi floodplains (see Figure 1).

Methods

An aerial census was conducted of the above systems, between 11 and 20 August 2004, using a Maule four-seater high wing aircraft. The census team consisted of a pilot, a recorder and two observers. A total count of water bodies and floodplains was carried out. The edges of the floodplains were demarcated using aerial photographs and satellite images, and the survey areas were then divided into 15 km² blocks. GPS and mobile GIS technology was used to cover each block intensively and to plot each observation. The mean survey height above ground was 255 to 304 ft, flying time amounted to a total of 36.5 hours (including ferry time) and the search rate ranged between 0.9 and 2.3 km²/min.

Results and discussion

Two pairs of Wattled Cranes were recorded in the Mahango Game Park on the floodplains of the Okavango system and eight pairs in the East Caprivi. Four pairs were in the Mamili section (three pairs on the Kwandu floodplains and one on the Linyanti), three pairs on the Linyanti north-east of Mamili, and one on the Chobe system (Figure 1). **In total, just 10 pairs of Wattled Cranes were recorded on the floodplains of north-east Namibia.**

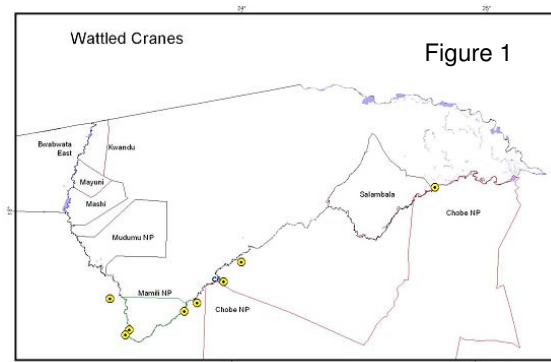


Chris Brown (Photo: ICF)

There is a clear concentration of Wattled Cranes near the southern ends of the Kwandu-Linyanti system, where the birds were mainly on the Botswana side of the floodplains. There were no Wattled Cranes in very suitable habitat from the Angola border to the Mamili National Park. This coincides with distribution patterns for other species of wildlife. It is clear that there is significant disturbance and persecution of wildlife on the Namibia side of the border, and Wattled Crane distributions further reflects this unhappy situation. The conservancy programme and the work of the Ministry of Environment and Tourism are not delivering satisfactory results when it comes to floodplain species. The floodplain habitat and its fauna, which constitute some of the main attractions of the region, as well as an important production system and resource in that part of Namibia, clearly need to receive more concerted focus and effective conservation action.

Acknowledgement

We would like to thank Ralph Meyer-Rust and his team at Lianshulu Lodge for providing excellent logistic support, accommodation and meals.





CRANE FOCUS (2)

Crane species accounts: THE BLUE CRANE

Ed.'s note: Dr Rob Simmons has provided the draft text (below) on the Blue Crane for the Namibia Red Data Book. Given the status of the species, it is encouraging to hear Rob report that the RDB texts will hopefully be finished by Christmas and the CD available sometime in January/February 2005; funds are still being sought for publishing the book. Kevin McCann of the South African Crane Working Group has already commented on the text. On the basis of initial genetic probing, there is the exciting possibility that the Etosha Blue Cranes may be distinct from the SA ones. Please forward your comments (a.s.a.p.!) to Rob at email harrier@botzoo.uct.ac.za, or to us at the address below.



BLUE CRANE *Anthropoides paradiseus* **Critically Endangered**
Range: Endemic southern Africa, isolated population Etosha grasslands
Area of Occupancy: 23 969 km²
Population estimate in Namibia: 60 birds
Population trend: Declining
Habitat: Wet grasslands and pans
Threats: Fragmented, genetically isolated? population, human encroachment

Distribution and abundance

This species has the smallest range of all of the world's cranes (del Hoyo et al 1994), and is endemic to southern Africa. It is confined to South Africa's highveld grasslands, the grain belt of the Western Cape and the eastern grassy Karoo regions, while in Namibia it is only found in Etosha National Park and the surrounding grasslands to the immediate north (Allan 1997). Birds here are distributed mainly in the wetter areas of this rather arid region (rainfall mean 440 mm). They are distributed in pairs or trios but groups up to 30 birds sometimes occur. They are associated primarily with Etosha Pan's springs which provide them with drinking water and, more importantly safe roosting sites in the larger perennial pans (Brown 1992, Simmons et al 1996).

Its range in South Africa is centred on the Overberg / Swartberg region and the eastern Karoo, with other populations occurring in the eastern parts of the country, including the north eastern Cape, Free State, Mpumalanga and Kwa-Zulu Natal (McCann 2000). There is apparently no movement between these areas and they are treated as three separate subpopulations (McCann et al 2001). The total South African population was accurately estimated at 25 120 birds (McCann 2002), with 48% occurring in the Western Cape's grain belts.

The Namibian population has been estimated twice within the grasslands centered on Lake Oponono, and the Ekuma River in the west and Andoni in the east, and around the main salt pan of Etosha NP. In the late 1980s, Brown (1992) and T Archibald surveyed all likely areas with Etosha staff and concluded that not more than 80 birds comprise the total Namibian population. When South Africa's population decline became apparent (Allan 1994) Simmons et al (1996) initiated a follow up estimate of Etosha's population, using volunteers, park staff and aerial surveys (C Brain) of the northern grasslands. As in earlier surveys, eastern Etosha, particularly the Andoni Flats and Namutoni were the most utilised areas

(73% of 60 birds) while the western drier regions of Etosha were poorly populated with only seven birds occurring between Halali and Okaukuejo and two birds west of Okaukuejo at Ozonjuitji m'Bari (Table 1). The northern grassland associated with the Ekuma River and Lake Oponono, surveyed from the air realized about 10 birds, despite a lack of records from the national wetland bird surveys (Jarvis et al 2001). Therefore, the maximum number of Blue Cranes associated with Etosha's grasslands inside and outside the Park is about 60 birds, of which 18% (11) are yearlings. This represents a 25% decline in 6-8 yrs. The single most important site where birds assemble to roost is the Andoni water hole with up to 30 birds.

The question arises, how isolated is the Namibian population? The available evidence from studies of movements (in South Africa) show that no colour ringed birds from one of the three subpopulations has ever been found to move to another population (K McCann in litt); the furthest moved by 27 birds



Blue Crane family group near Namutoni, Etosha in May 2004 (Photo: Ann Scott)



recovered from 65 ringed was 426 km within one subpopulation (McCann et al 2001). Satellite tagged birds have virtually stayed stationary over a 2-yr period (McCann et al 2001); and last, breeding seasons of the southern African and Namibian populations are spaced about 3 months apart (below). Recent genetic evidence suggests that Etosha's birds are isolated and preliminary evidence notes that they can indeed be differentiated from South African populations (M Wink in litt).

Ecology

Found primarily in dry grassland habitat where water regularly occurs (McCann 2000). In the arid grasslands of Etosha NP the favoured areas are the perennial springs around the pan edge and isolated water holes in grassy plains such as Andoni (Brown 1992, Simmons et al 1996). Nests occur on the ground in open grassy areas, not far from water, such that chicks may be led to water to drink and escape predators. One bird nested on an island in Fischer's Pan (T Osborne pers obs). Birds feed on seeds and flowers from grasses, and frogs reptiles, and fish (Maclean 1993). In Etosha the cranes regularly turn over elephant and ungulate dung to consume dung beetles and other insects (RES pers obs). Pre-breeding groups of between 6 and 30 birds are not uncommon and twenty records of active nests indicate that egg-laying occurs between December and March with a peak in February (Brown 1992). A larger sample ($n = 33$) including the Brown (1992) records from the Namibian Avifaunal data base (Jarvis et al 2001) indicates that nests with eggs were found in January (2), February (4), March (2), June (1). Nests with chicks were found from January (2), February (9), March (9), April (2), May (1), and October (1). This is several months later than the September-January breeding season in South Africa (Allan 1997), and in particular compared to the October to December peak in the grassland areas of South Africa (Allan 1993). Ave clutch size is 1.71 ($n = 7$), with c/1 (2) and c/2 (5) the only clutches recorded in Etosha. Nests are recorded from Batia (Namutoni), Twee Palms (commonly Chudop, Andoni Vlake, Fischer's Pan and the Halali Plains (Jarvis et al 2001). Brood size varied from 1 to 3 (chick sizes not given) with broods of two ($n = 12$) more common than broods of one ($n = 8$) or 3 ($n = 1$) (Jarvis et al 2001).

Threats

The 25% decline in population size in Etosha is unexplained (Simmons et al 1996). Lower than typical rainfall through the late 1980s and early 1990s in northern Namibia (Mendelsohn et al 2002) could explain poorer recruitment and lowered populations, even though 18% of the population in 1996 were yearlings (Table 1), indicating breeding does continue at such times. Expanding human populations in northern Namibia, and the encroachment of local people with cattle into the grasslands north of Etosha will eventually drive cranes from these areas. Lake Oponono for example, with its fresh water, is a focal point for cattle and people who place snares in many trees and other roost areas to capture and eat birds (W Versfeld pers obs). Instances of cranes being

killed are unknown but not unlikely, and collisions with power lines in the eastern grasslands of Etosha are possible given that Blue Cranes are known to be highly vulnerable to powerline collisions in South Africa (McCann 2000). Furthermore the pan's springs are fed by aquifers that drain towards this lowest part of northern Namibia (Christelis & Struckmeier 2001), and increased human population size and bore hole drilling in the north will probably eventually reduce the permanence of these perennial springs, driving cranes away. Elsewhere in South Africa, poisoning (direct and indirect) in agricultural fields and loss of habitat due to afforestation and agricultural ploughing have been the two main contributory factors to population decline (Allan 1997, McCann 2000). This is not apparently a problem in Namibia.

Isolated and small populations can be prone to inbreeding effects if genetic heterogeneity has been lost (Soule ???); this could apply to Etosha's cranes given the small breeding population of 24 prs (Simmons et al 1996), and their apparent genetic isolation (M Wink in litt). This, disease and catastrophic events such as severe drought under global climate change could push such a small population to extinction within a generation or two.

Conservation status

This species is classified as *Critically Endangered* in Namibia because of its tiny population size, and the 25% decline since the late 1980s. It is additionally highly isolated given that the closest breeding populations are found in the North West Province of South Africa, over 1000 km to the south east. Thus little immigration, if any, is likely given the longest movement of a Blue Crane ever recorded was 426 km and most populations are sedentary (Underhill et al 1999, McCann et al 2001); the Etosha population must be self-sustaining. Its global (Stattersfield and Capper 2000) and South African (McCann 2000) populations are categorized as *Vulnerable* given the healthier (25 000 birds) but declining populations there.

Actions

5-yearly total population assessments - coinciding with Etosha aerial game counts - should be conducted to continually assess populations. If low rainfall is the root cause of decreasing populations then increased populations (and recruitment) are expected following high rainfall years. Areas such as Lake Oponono, covered well during wetland monitoring (W Versfeld) should be continually checked for cranes and other areas in the northern Etosha grasslands should be systematically searched for (all) cranes. Critical waterholes (e.g. Andoni and Twee Palms) should be given special attention and should be pumped when necessary to maintain levels during drought periods.

Given the sedentary nature and different breeding periods of Etosha's cranes their genetic status should be further investigated to determine if inbreeding effects are likely. Blood samples can be collected from flightless chicks to cause the least disturbance. A colour-ringing study will assist in



determining population size, the residence and survival of select pairs. Low level studies of their movements and use of habitats around Etosha will assist in identifying critical areas which should be given conservation attention.

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Table 1. Maximum numbers of Blue Cranes observed throughout Etosha National Park by student volunteers between 8 and 30 December 1994 and one aerial survey. All suitable grassland habitat where cranes might occur was surveyed (Simmons et al 1996).

DATE (1994)	REGION (East or West of Halali)	GROUP COMPOSITION
8 December	1. Salvadora West	2 adult
9 December	2. Chudop East	2 adult
11 December	3. Aroe East	2 adult
11 December	4. Twee Palms East	4 adult + 1 yearling
11 December	5. Batia East	2 adult
11 December	6. Naumses East	2 adult
12 December	7. Fischer's Pan East	2 adult
17 December	8. m'Bari West	2 adult
18 December	9. Etosha (causeway) East	2 adult + 3 yearlings
18 December	10. Gemsbokvlakte West	2 adult
20 December	11. Kapupuhedi East	2 adult
20 December	12. Ondongab East	2 adult + 1 yearling
20 December	13. Andoni East	13 adult + 6 yearlings
December	14. Ekuma River/Oponono (NW border)	10 adult (? yearlings)
TOTALS	14 areas	49 ADULT
	- 9 East	11 YEARLINGS
	- 4 West	(18%)
	- 1 North West boundary	= 60 CRANES

RES

27 Jan 2003 - 1st draft
 Reviewed by: K McCann 18 August 2004
 7 April 2004 - 2nd draft

SUMMARY OF CONSERVATION ACTIONS

(see text for details)

- Five-yearly total population assessments should be conducted - coinciding with Etosha aerial game counts, and including northern Etosha grasslands.
- Levels of critical waterholes at Etosha (e.g. Andoni and Twee Palms) should be maintained during drought periods.
- Genetic status should be further investigated (by taking blood samples from flightless chicks) to determine if there is inbreeding effect.
- Colour-ringing study will assist in determining population size, residence and survival of select pairs.
- Low level studies of movements and use of habitats will help identify critical areas for conservation attention.

